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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,920	10/15/2001	Charles Douglas Murphy		2089

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EXAMINER

DO, CHAT C

ART UNIT	PAPER NUMBER
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2193

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,920

Applicant(s)

MURPHY, CHARLES DOUGLAS

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 12/21/2004.
2. Claims 1-16 are pending in this application. Claims 1, 7, 9, and 15 are independent claims. In Amendment, claims 1-16 are amended. This Office action is made final.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations cited in claims 1-16 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Note: Drawings 3-4 submitted by applicant in previous reply are considered as introducing new subject matter or materials into the original specification as clearly cited below. Assuming, the applicant can provide evidence or point out clearly in the original specification supporting Drawings 3-4, but these drawings 3-4 do not show feature of step (e) of claim 1 and control signals of other dependent claims 2-6 for example. The applicant is required to draft Drawing(s) with complete features of claims.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 2, the limitation "wherein there is no state of first multiplicity of control signals such that with first real number as..." is unclear whether or not it means there is no control signal given the first real number is the first input, the second real number is the second input, and the first output is equal to the product of first input and the second input. For examination purposes, the examiner considers claim 2 as first real number as first input, second real number as second input, and the first output as the product of first real number and second real number.

Re claim 3, it has similar rejection as cited in claim 2.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Kosugi (U.S. 6,223,197).

Re claim 1, Kosugi discloses in Figures 2-4 a machine used in computing one or more sums of products (e.g. in Figure 2 $Ax2^6$, $Ax2^2$, $Ax2^0$, and $Ax2^{59}$) wherein a first of sums of products (e.g. in Figure 2 $Ax2^6$, $Ax2^2$, and $Ax2^0$) is not a desired product of two numbers (the desired product is $Ax2^{59}$) and therefore not a decomposition of a single product into a sum of partial products, comprising:

- a. a first real number (e.g. A) represented in a first finite-precision numeric format
- b. a second real number (e.g. 2^2) represented in a second finite-precision numeric format
- c. a third real number (e.g. 59) represented in a third finite-precision numeric format
- d. first real multiplier means (lower portion of Figure 2 wherein to produce $Ax2^0$ and $Ax2^2$) for computing a first set of intermediate terms and a first product, first product (e.g. $Ax2^2$) being the product of first real number (e.g. A) and second real number (e.g. 2^2)

e. second real multiplier means (upper portion of Figure 2 wherein to produce $Ax59$) for computing a second product, second product being the product of first real number (A) and third real number (59) and second real multiplier means (upper portion of Figure 2) using one or more members of the set consisting of first product (output of $Ax2^2$) and first set of intermediate terms ($Ax2^0$)

f. means for including either first product or second product in first of sums of products (e.g. final output including the first product)

whereby first real multiplier means and second real multiplier means share computation (e.g. sharing the output product or partial terms and abstract lines 1-4).

Re claim 2, Kosugi further discloses in Figures 2-4 second real multiplier means further comprises a first input, a second input, a first output (e.g. Figure 2), and a first multiplicity of control signals and wherein there is no state of first multiplicity of control signals such that with first real number as first input and with second real number as second input, first output is equal to the product of first real number and second real number (e.g. upper portion of Figure 2 wherein to produce $Ax59$).

Re claim 3, Kosugi further discloses in Figures 2-4 first real multiplier means further comprises a first input, a second input, a first output (e.g. Figure 2), and a first multiplicity of control signals and wherein there is no state of first multiplicity of control signals such that with first real number as first input and with third real number as second input, first output is equal to the product of first real number and third real number (e.g. lower portion of Figure 2 wherein to produce $Ax2^0$ and $Ax2^2$).

Re claim 4, Kosugi further discloses in Figures 2-4 the set consisting of one or more members of set consisting of first product and first set of intermediate terms does not include first product whereby second real multiplier means does not use first product (upper portion utilized the output of first adder 5 to compute the desired product).

Re claim 5, Kosugi further discloses in Figures 2-4 including additive means (e.g. 5 and 10) for including both first product and second product in a first of product sums (e.g. it adds all products up 10).

Re claim 6, Kosugi further discloses in Figures 2-4 including first additive means for adding first product to a first product sum and second additive means for adding second product to a second product sum, where first product sum and second product sum are separate product sum such that one or both of the following properties hold: a. there is at least one sum of products to which first product sum contributes and to which second product sum does not contribute (e.g. 5) b. there is at least one sum of products to which second product sum contributes and to which first product sum does not contribute (e.g. 10).

Re claim 7, Kosugi discloses in Figures 2-4 machine used in computing one or more sums of products (e.g. in Figure 2 $Ax2^6$, $Ax2^2$, $Ax2^0$, and $Ax2^{59}$) wherein at least one of sums of products is not a desired product of two numbers (e.g. in Figure 2 $Ax2^6$, $Ax2^2$, and $Ax2^0$) and therefore not a decomposition of a single product into a sum of partial products, comprising: a. a first number (A) in a first finite-precision numeric format b. a second number (e.g. 2^2) in a second finite-precision numeric format; a third number (e.g. 59) in a third finite-precision numeric format d. multiplier means (Figure 2)

for computing a first product (second input to 5) equal to the product of first number (A) and second number (2^2) and for computing a second product (Ax59) equal to the product of first number (A) and second number (59), where at least one of the calculation results used in computing first product is also used in computing second product (the second product is computed by combining the first product with 2^6) means for including either first product or second product in first of sums of products (e.g. final output including the first product) whereby multiplier means computes at least two products using at least one shared calculation result.

Re claim 8, Kosugi further discloses in Figures 2-4 a second product is not equal to the product of first number and the complex conjugate of second number (inherently Ax59 is not the same as $0j \times 2^2$) except in the following cases: second number is equal to the complex conjugate of third number or/and first number is zero ($A = 0$, then every product is equal to zero which is equal to each other) b. second product is not equal to the product of second number and the complex conjugate of first number (inherently Ax59 is not the same as $0j \times 59$) except in the following cases: first number is real, and second number is equal to third number or/and first number is zero ($A = 0$, then every product is equal to zero which is equal to each other) whereby multiplier means is not a multiple-output multiplier which computes the product of two numbers and the product of two numbers with one of the numbers conjugated.

Re claim 9, it is a method claim of claim 1. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 10, it is a method claim of claim 2. Thus, claim 10 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Re claim 11, it is a method claim of claim 3. Thus, claim 11 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 12, it is a method claim of claim 4. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 13, it is a method claim of claim 5. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 5.

Re claim 14, it is a method claim of claim 6. Thus, claim 14 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 15, it is a method claim of claim 7. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Re claim 16, it is a method claim of claim 8. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Response to Amendment

8. The amendment filed 12/21/2004 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

First, Drawings 3-4 are considered as introducing new matter(s) into the original disclosure of the invention because originally the disclosure does not disclosing the structure of Drawings 3-4 and particularly the multiplier as drawn in Figure 4.

Second, the feature "multiplicity of control signals" in independent claims 2-3 is also considered as introducing new matter(s) into the original disclosure of the invention. Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

9. Applicant's arguments filed 12/21/2004 have been fully considered but they are not persuasive.

a. The applicant argues in page 10 third paragraph for claim 1 that the cited reference by Kosugi does not disclose a computation of two or more separate products jointly instead of only computation of a single product broken down into a sum of partial products.

The examiner respectfully submits that Kosugi does clearly and inherently disclose or suggest all the cited limitations language in the body of the independent claim 1 with the following reasons: First, the limitation in preamble has not been given patentable weight as reason below; Second, the examiner considers each of products 1-3 in Figure 2 as separate product as defined in the body of the claimed invention. The desired product is the output of adder 7, which is Ax59. Thus, each of products 1-3 is not the desired product because the

desired product is sum of all the products 1-3 which clearly meets the claimed invention.

In response to applicant's arguments, the recitation "therefore not a decomposition of a single product into a sum of partial products" in each of the independent claims 1, 7, 9, and 15 has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2193

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

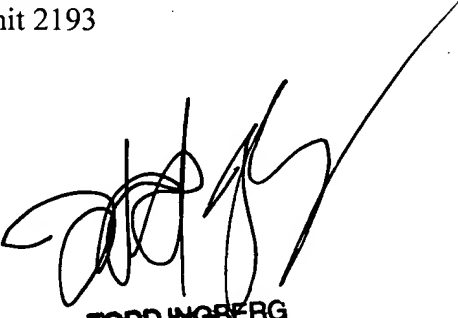
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on 7:00AM to 5:00PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C Do
Examiner
Art Unit 2193

May 5, 2005



TODD INGBERG
PRIMARY EXAMINER

Figures:

Applicant has furnished the drawings Figure 3 and Figure 4, which appear separately on the next two pages of this amendment.

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Fig 4 shows an embodiment of the invention wherein desired products which are the imaginary components of weighted real inputs to a 64-point DFT are computed and added to sums of products which are the DFT outputs, with desired product computation by a single multiplier used once to compute $x[1] \sin(2\pi/64)$ and intermediate terms and used again to compute $x[1] \sin(4\pi/64)$ using fed-back intermediate terms.

In the section REFERENCE NUMERALS IN DRAWINGS with section header on page 10 and body on pages 10 and 11, page 11 line 16 has been amended as follows:

64 a 16-bit decimal value of $\sin(2\pi/64)$

66 DFT weight component $\sin(2\pi/64)$

68 DFT weight component $\sin(4\pi/64)$

70 multiplier for computing the product of $x[1]$ and $\sin(2\pi/64)$

72 desired product $x[1] \sin(2\pi/64)$

74 adder for computing the sum of products $\text{Im}\{X[1]\}$

76 DFT output $\text{Im}\{X[1]\}$

78 additional products of other DFT inputs contributing to $\text{Im}\{X[1]\}$

80 multiplier for computing the product of $x[1]$ and $\sin(4\pi/64)$ using intermediate terms from computation of $x[1] \sin(2\pi/64)$

82 intermediate terms from computation of $x[1] \sin(2\pi/64)$

84 desired product $x[1] \sin(4\pi/64)$

86 adder for computing the sum of products $\text{Im}\{X[2]\}$

88 DFT output component $\text{Im}\{X[2]\}$

90 additional products of other DFT inputs contributing to $\text{Im}\{X[2]\}$

92 a multiplier for computing the desired product $x[1] \sin(2\pi/64)$ and also the desired product $x[1] \sin(2\pi/64)$, the latter using intermediate terms of the former

FIG. 3

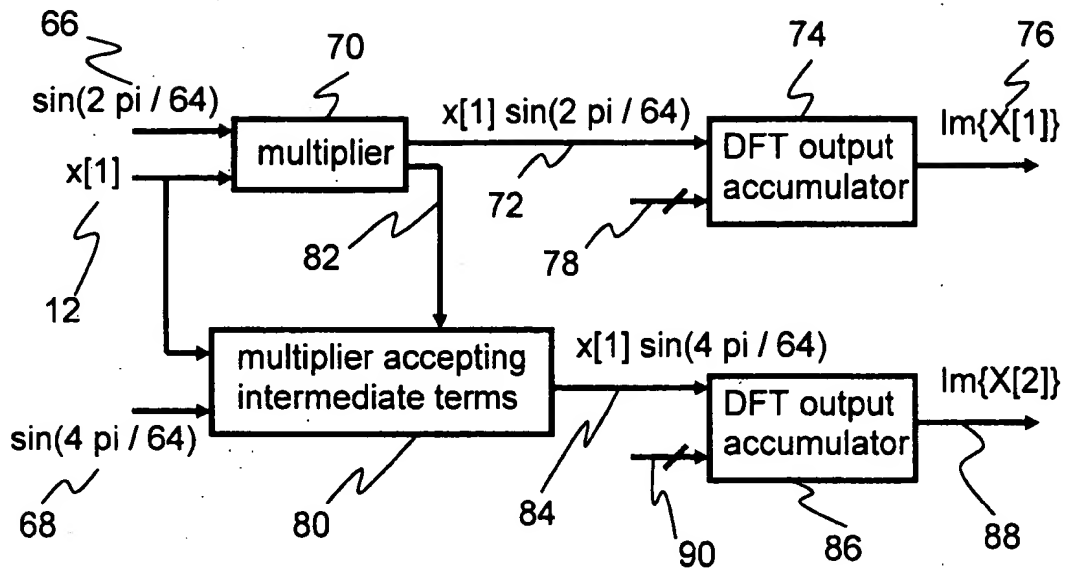




FIG. 4

